Forest Insect & Disease Management

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Detection Report
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AERIAL SURVEY OF SPRUCE BUDWORM DEFOLIATION ON THE CHEQUAMEGON NATIONAL FOREST, 1979

by

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INTRODUCTION

The spruce budworm, Choristoneura fumiferana (Clemens), is native to the Chequamegon National Forest in northwestern Wisconsin. During the years 1975 through 1978 the insect was at low population levels and caused only minor defoliation of balsam fir, Abies balsamea (L.) Mill., and white spruce, Picea glauca (Moench) Voss. Extensive spruce budworm damage was detected by foresters in 1979, and they asked Forest Insect and Disease Management personnel to survey the area and assess the damage.

OBJECTIVE

The objective of the survey was to map areas of moderate to severe current defoliation by spruce budworm on the Chequamegon National Forest.

METHOD

On July 23 and 25, 1979, an aerial survey was made of the Washburn Ranger District south of U.S. Highway 2 and the Hayward, Glidden, and Park Falls Ranger Districts in their entirety. The aircraft flew at 1,000 ft above the terrain on preplanned flight lines (east and west) that were 3 miles apart. The crew consisted of a pilot, a navigator, and two mappers. The navigator was a forester from the Ranger District being flown, and the mappers were technicians from Forest Insect and Disease Management. The flights took 10 h.

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Current defoliation and past damage to spruce and fir were sketched on U.S. Forest Service half-inch-to-the-mile maps; the sketched areas then were measured for acreage with a dot grid. Areas with trees showing reddish-brown new foliage were mapped as moderately to heavily defoliated, and areas with trees showing a greyish appearance were mapped as severely defoliated. About 10 percent of the sketch-mapped areas were ground checked to confirm cause of defoliation and area affected.

RESULTS

One hundred and forty-six stands, a total of 9,054 acres, were defoliated by spruce budworm in 1979. Heavy defoliation occurred on 7,361 acres, and severe defoliation occurred on 1,693 acres (Figures 1, 2, 3, 4). Affected stands ranged in size from 12 to 331 acres and averaged 59 acres. The most common stand size was 27 acres.

Although more acres were under attack on the Glidden Ranger District than elsewhere on the Forest, more acres were severely defoliated on the Hayward Ranger District (Table 1). The location of the severely defoliated spruce-fir stands is shown in Table 2.

DISCUSSION AND RECOMMENDATIONS

The spruce budworm population has reached epidemic proportions on the Chequamegon National Forest. Of the nearly 64,000 acres of spruce-fir type on the Forest, 9,054 or 14 percent are under heavy attack by the spruce budworm.

This survey detected only moderate to severe defoliation levels. Low levels of defoliation (up to 30 percent of the new foliage eaten) cannot be detected from the air. It is likely that all spruce-fir stands on the forest support some spruce budworm damage and that the level of damage will increase as insect populations build.

It is recommended that the same districts of the Forest be surveyed again by Forest Insect and Disease Management in 1980 to determine levels of stand damage and that severely defoliated stands be presalvaged according to the guidelines already provided.

Table 1.--Number of acres defoliated by spruce budworm in each district, Chequamegon National Forest, 1979

Ranger District	Heavy defoliation	Severe defoliation
Park Falls	691	235
Glidden	4,685	90
Hayward	1,985	1,177
Washburn	-	191
Total	7,361	1,693
Grand Total	9,054	

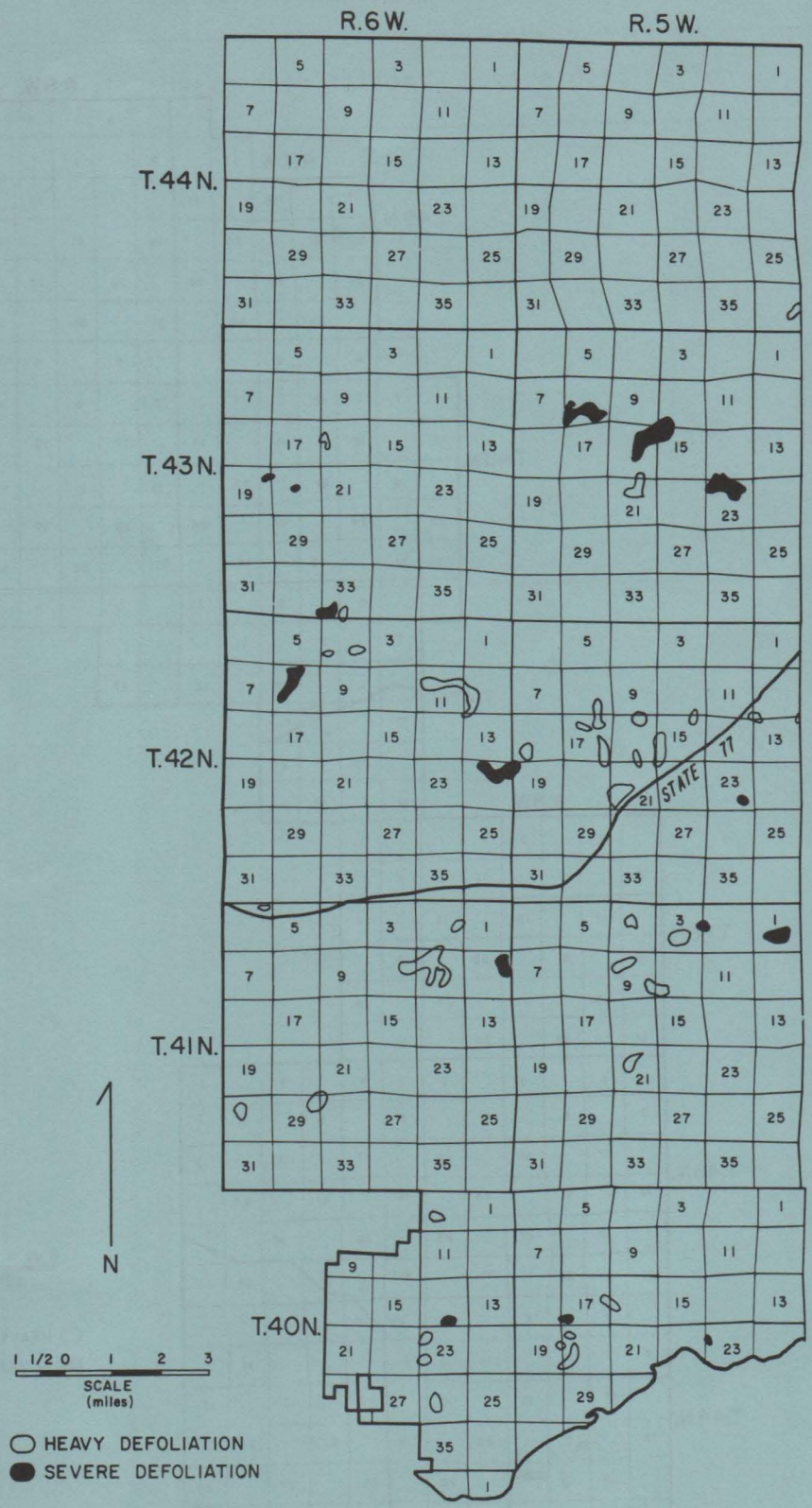
Table 2.--Location of severely defoliated spruce-fir stands, Chequamegon National Forest, 1979

Ranger District	Town (North)	Range	Section(s)
Hayward	43	6W	19, 18, 33
	43	5W	8, 16, 23
	42	6W	8, 24
	42	5W	23
	41	6W	12
	41	5W	1, 2, 3
	40	6W	14
	40	5W	17, 23
Park Falls	40	1E	26
	40	2E	21
	39	1E	26
	39	3E	13, 24
	38	3E	7
Glidden	42	4W	29
Washburn	44	8W	21, 27, 28

SPRUCE BUDWORM DEFOLIATION-1979

CHEQUAMEGON NATIONAL FOREST

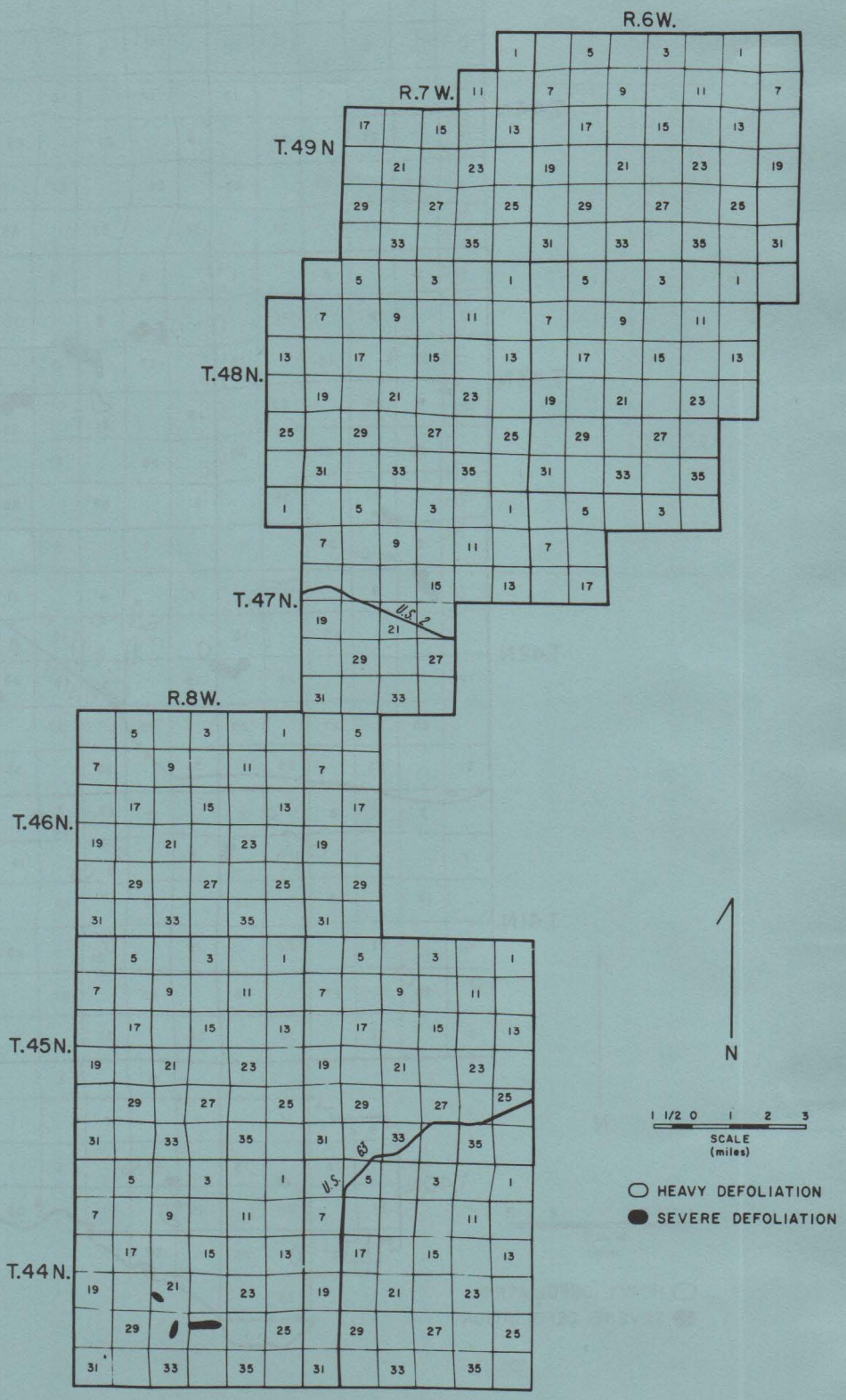
(Hayward Ranger District)



SPRUCE BUDWORM DEFOLIATION-1979

CHEQUAMEGON NATIONAL FOREST

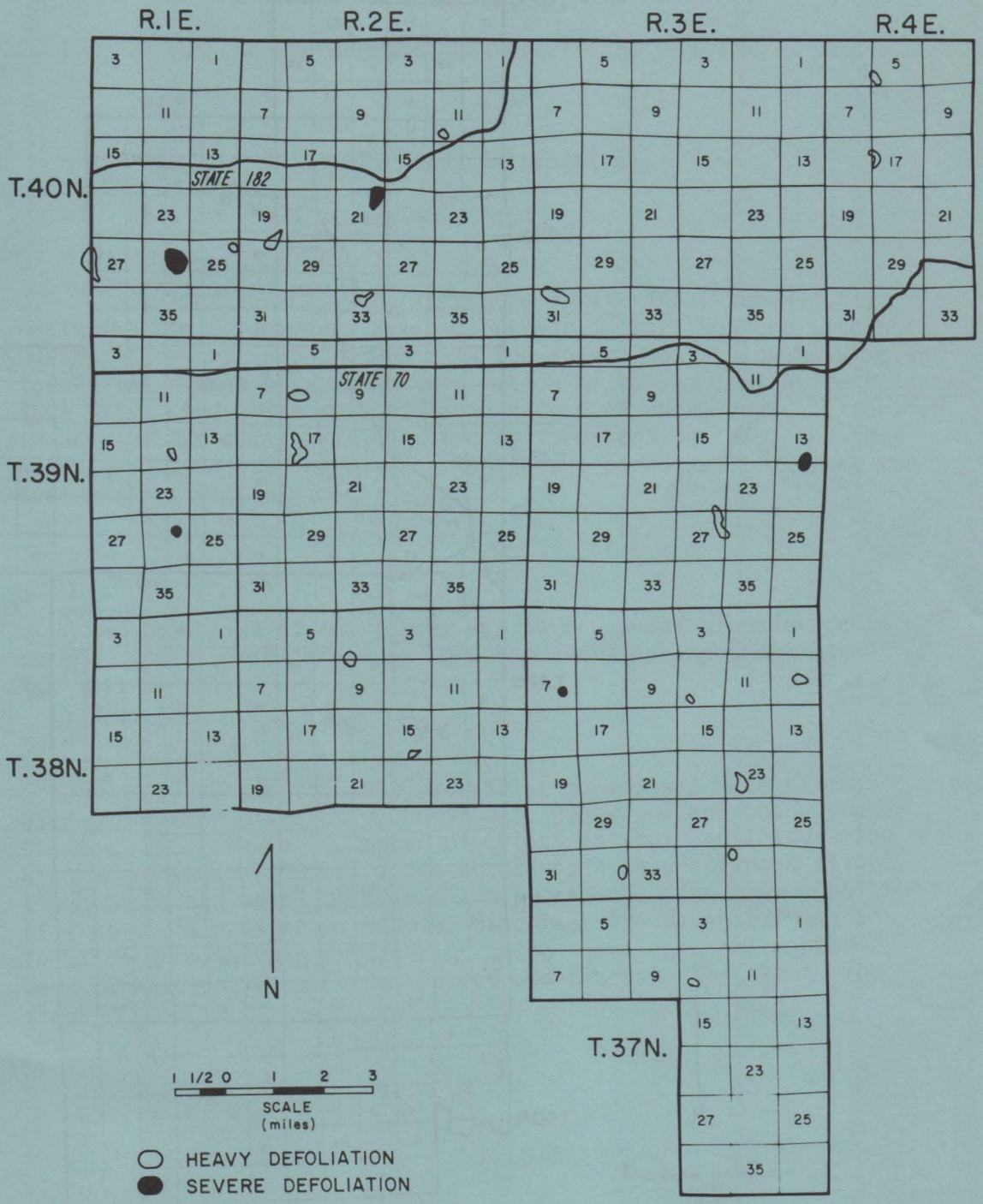
(Washburn Ranger District)



SPRUCE BUDWORM DEFOLIATION - 1979

CHEQUAMEGON NATIONAL FOREST

(Park Falls Ranger District)



SPRUCE BUDWORM DEFOLIATION - 1979

CHEQUAMEGON NATIONAL FOREST

(Glidden Ranger District)